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# **DoD Green Remediation Policy Update**

**May 11, 2011**

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(Installations and Environment)**

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE <b>11 MAY 2011</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-2011 to 00-00-2011</b>	
4. TITLE AND SUBTITLE <b>DoD Green Remediation Policy Update</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Office of the Deputy Under Secretary of Defense (Installations and Environment), 3400 Defense Pentagon, Room 3B856A, Washington, DC, 20301-3400</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES <b>Presented at the NDIA Environment, Energy Security &amp; Sustainability (E2S2) Symposium &amp; Exhibition held 9-12 May 2011 in New Orleans, LA.</b>					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>11</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			



# Overview

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- Green Remediation opportunities in the DERP
- DoD Green Remediation Policy
- DoD Green Remediation Goal
- Implementing DoD Green Remediation
- Next Steps



# Defense Environmental Restoration Program

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- DoD spent \$2.2 billion on DERP in FY 2010
- Tremendous opportunity to make an impact through sustainable remediation decisions and practices
- Green remediation is the practice of considering all environmental effects of remedy implementation and incorporating options to maximize net environmental benefit of cleanup actions





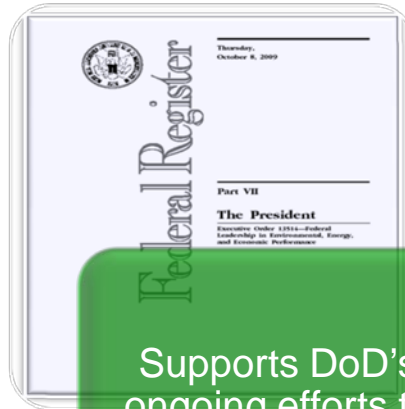
# DoD Green Remediation Policy

## DoD Policy Memorandum

### “Consideration of Green and Sustainable Remediation Practices in the Defense Environmental Restoration Program”



Encourages DoD Components to consider green and sustainable remediation practices throughout the cleanup process



Supports DoD's ongoing efforts to implement Executive Orders 13423 and 13514



Reduces DoD's overall energy demand



# DoD Green Remediation Policy Overview

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- Evaluates current and future remedial activities
- Encourages the DoD Components to consider green remediation options when and where they make sense
- Will not re-open Records of Decisions or other decisions and agreements that may already be in place or under negotiation
- Sustainability is not an excuse to do nothing



# DoD Green Remediation Goal

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- Minimize the overall environmental footprint of the remedial system and monitoring program
  - Minimizing energy use and increasing energy efficiency
  - Considering and/or implementing environmental remediation technologies with inherent green/sustainability aspects
  - Preserving natural resources
  - Minimizing emissions
  - Using passive sampling where feasible
  - Minimizing fresh water consumption and maximizing water reuse in treatment systems
  - Maximize recycling, reuse, and reduction of materials, including waste



# Implementing DoD Green Remediation

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- Incorporating green and sustainable remediation into existing initiatives
- Developing tools to support green and sustainable remediation efforts
- Developing standardized performance measures (looking at how the Military Services collect and track green and sustainable remediation efforts)





## Current Results: DoD Green Remediation

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- DoD Components reported 58 cleanup projects underway with green and sustainable elements
- Increased the net environmental and economic benefit of a cleanup
- Decreased project costs and timeframes, while continuing to meet aggressive cleanup goals



# Case Study: Camp Withycombe

- Wetlands and soil were contaminated with a high concentration of metals from small arms training.
- GSR Approaches
  - Soil Treatment Process
    - o Dry particle separation to remove bullets from soil
    - o Wet soil washing process
  - All water involved in the treatment process was reclaimed for reforestation irrigation
  - More than 30,000 tons of soil remediated and 270 tons of lead bullet fragments were reclaimed for recycling
- Footprint Reduction
  - Shorter project lifespan and reduced cost (\$5M)
  - Eliminated 914 pounds of PM, 1.8 million pounds of CO<sub>2</sub>, 141,605 pounds of CO, 36,543 pounds of NO<sub>x</sub>, and 1,672 pounds of SO<sub>x</sub>



*The treatment system processed around 300 tons of soil daily.*



*Bullets were collected in reused one-ton capacity sugar sacks.*



# Case Study:

## Volunteer Army Ammunition Plant

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- TNT and DNT contamination in soil as high as 10% concentration, impacting both soil and groundwater
- GSR Approaches: On-Site Alkaline Hydrolysis
  - Soils were excavated and treated on-site within a contained asphalt-lined former pH control pond
  - Soil treated in 300 yard increments with caustic soda
  - More than 112,000 cubic yards of soil treated using alkaline hydrolysis
  - Total TNT/DNT mass removed is more than 75 tons
  - Average contaminant mass reduction is >93%
- Footprint Reduction
  - No hazardous waste disposal, landfill space, or off-site backfill
  - Reduced transportation/ lowered fossil fuel use
  - Recycled water was used to maintain optimum soil moisture during treatment
  - No risk from breakdown products



## Next Steps: DoD's Path Forward

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- Meet regularly with the DoD Components to assess Department progress
- Regularly engage with federal agency stakeholders to coordinate and share success stories
- Work with state regulators to adopt creative solutions to incorporate sustainability into our remedial systems
- Support Navy, Army, and Air Force efforts to develop best practices for green and sustainable remediation